ANALYSIS OF 26 CASES OF ACUTE MALARIAL NEPHRITIS.

From 1 to 10 years of age	2 cases.
" 10 " 20 " "	4 "
" 20 " 30 " "	9 "
" 30 " 40 " "	6 "
" 40 " 50 " "	5 "
Total	26 cases.

The figures in this table run practically parallel to those in our former statistics as to the relative frequency of malarial fever, with the exception of the slightly greater percentage of cases of nephritis between the ages of forty and fifty years. The small percentage of cases under ten years of age is, perhaps, explained by the absence of a children's ward in the hospital.

Sex:

Of the 26 cases there were males	17—65.3 per cent.
" " " females	9—34.6 "

Race:

20 of the 26 cases were in white patients	76.9 "
6 " " " negro "	23.0 "

These latter figures are striking. Of 1832 cases of malarial fever, but 82 (4.4 per cent.) were in colored patients; and yet of these few patients 6 (7.3 per cent.) developed acute nephritis, against 20 (1.1 per cent.) in 1750 whites.

These figures are quite in keeping with the clinical fact which we have learned to recognize, in this hospital at least, namely, that the colored race is much more susceptible to renal disease than the whites.

(To be continued.)

A CASE OF TWO ISOLATED CARCINOMATOUS GASTRIC ULCERS.[1]

APPARENT RECOVERY AFTER EXPLORATORY CŒLIOTOMY; DEATH EIGHTEEN MONTHS LATER, FOLLOWING A SECOND OPERATION; HYPERCHLORHYDRIA TO THE END.

By D. D. Stewart, M.D.,

PROFESSOR OF DISEASES OF THE STOMACH AND INTESTINE IN THE PHILADELPHIA POLYCLINIC AND COLLEGE FOR GRADUATES; PHYSICIAN TO THE EPISCOPAL HOSPITAL, ETC.

It is accepted that in approximately 5 to 8 per cent. of all cases of cancer of the stomach the growth has had origin about the cicatrix of a previously existing simple ulcer or in the margin of one still open.[2]

---

[1] Read at the thirteenth session of the Association of American Physicians, Washington, D. C., May 3, 1898.

[2] The carcinomatous degeneration of the margin of the cicatrix of an ulcer was first pointed out by Brinton. Rosenheim considers that from 5 to 8 per cent. of gastric ulcers become carcinomatous. Zeitschrift f. klin. Med., Bd. xvii., and Berl. klin. Woch., 1889, p. 47.

Cases, however, of complete transformation of an open ulcer into carcinoma, forming the *ulcus carcinomatosum*, are much more rare,[1] and are of no little interest and importance, representing, as they do, a group, the diagnosis of individual cases of which is often most difficult.

It is not to the review of the literature of these that attention is now directed, but to the consideration of a case recently encountered, about which several curious features are centred, that cause it to stand somewhat apart and render it worthy of isolated report.

The points of special interest are that eighteen months before the patient came under the writer's observation the ailment was regarded as one of carcinoma of the stomach by the surgeon, Dr. Keen, who at that time did an exploratory cœliotomy. The body of the stomach was then apparently so much involved in the presumed cancerous process that the idea of a gastro-enterostomy, previously entertained, was abandoned. What appeared to be two small glands in the omentum were removed, and one was found to be a metastatic cancerous nodule. A seeming return to perfect health followed the section, with a gain in weight at least ten pounds in excess of that ever weighed before. Dr. Keen reported the case nine months later as to all appearances completely cured. The symptoms subsequently recurred. Through the kindness of Dr. Keen, the case then, after a lapse of eighteen months, came under the writer's observation. The indications were now rather of chronic ulcer, and but for the knowledge of the removed cancerous nodule it would in all probability have been so diagnosticated. No tumor existed; the stomach was normally placed and not dilated; the secretory function was normal; motility was lowered; the patient could eat and digest a hearty meal without pain or discomfort. Digestive leucocytosis was present, and pathological leucocytosis, as concerns absolute increase in number of leucocytes, absent. The skin was of cachectic hue, but the patient had lost only a minor part of the large amount of weight gained after operation, and his physical condition was relatively remarkably good. A second exploratory cœliotomy disclosed what appeared to be an entirely healthy stomach save at one point, at which was discovered a large ulcer. The patient died as a result of septic peritonitis. The necropsy showed two large distinctly isolated and widely separated carcinomatous ulcers, while the remainder of the stomach except the pylorus, which was the seat of simple fibrous thickening, was perfectly healthy.

The patient, J. H. K., was a physician, aged fifty-two years. He had never had syphilis. The family history was fair; parents and grandparents had all died of old age, with the single exception of his mother, who had succumbed to presumptive gastric cancer when sixtyfive years old. When in his best condition his body-weight was between 155 and 165. This last weight had, previous to the first operation, never been exceeded. He had typhoid fever at the age of twenty-two years. Diarrhœa of about a year's duration succeeded. Otherwise he had been free from illness until within the past six years; although for nearly twenty years, as was elicited on careful inquiry, he had had more or less neurotic disturbance of digestion, apparently of the nature of hyperchlorhydria, occurring chiefly when he was overworked or subjected to excessive mental strain. He was of a nervous disposition and of easily disturbed mental equipose. A hard-working country practitioner, his habits of living were irregular as concerned eating and sleeping. In December, 1890, his mother, to whom he was much attached, died. She had had symptoms of gastric cancer, the duration of which ailment was about a year. Her illness and subsequent death worried him a great deal. He lost appetite and fell off in weight and strength, and was much constipated. His ailment was regarded as a mere nervous indisposition, for which a change of air was suggested. After a few months spent in California he gained in strength and weight, and remained in fair condition for over a year. But anorexia, constipation, and a tendency to heartburn and pyrosis continued. Actual pain was apparently never present. There was, however, a sensation of distress and uneasiness, which appeared several hours after a meal, associated with heartburn. These sensations were felt in the epigastrium, and often extended posteriorly to a point immediately below the inferior angle of the right scapula. This is as he described his symptoms to me. In Dr. Keen's notes, taken just before the first operation, it is stated that he suffered from much gastric distress six years before, and "a sense of weight and pressure extending through the body from the pit of the stomach to the back at a point to the right of the spine on a level with the lower angle of the scapula." He finally abandoned practice almost entirely, devoting himself to travel. His health was now on the whole fair, until the latter part of February, 1896, two-and-a-half months before he came under Dr. Keen's observation. Then he had an attack of influenza. A sudden and profuse gastric hemorrhage occurred early in March, 1896. About a quart of blood was said to have been vomited, and a pint afterward escaped by the bowel. No aggravation of the gastric symptoms had preceded the hemorrhage, and the severe hemorrhage did not recur. But subsequently to the time of operation (five weeks) he vomited very frequently a dark-looking fluid, recognized by his attendant, Dr. Wright, of Erie, as altered blood. During the greater part of this time he was nourished almost solely by the bowel. From his former weight of 160 pounds he had fallen, during the six years, to about 130 pounds. As a result of the hemorrhage and the five weeks exclusive bowel-feeding, there was a further loss of about fifteen pounds. He was first seen by Dr. Keen, May 13, 1896. A history of the case, very much as is stated, was elicited by Dr. Keen, who also noted that his color was decidedly sallow, and that "he appeared as one who had lost much strength and was quite sick." A physical examination by Dr. Keen[1] disclosed no disease in the organs of the chest or in the kidney. No abdominal tumor could be made out, but "a distinct sense of marked resistance was apparent in the epigastrium." The debilitated condition of the patient rendered it unwise, in Dr. Keen's opinion, to make a study of the condition of the stomach by the employment of the tube. Nothing is therefore known of the condition of the secretory function at this time. An exploratory cœliotomy was now determined on by Dr. Keen, "the expectation being that a cancer of the stomach would be revealed." To quote from Dr. Keen's report, just referred to:

---

[1] According to Hemmeter (Medical Record, September 11, 1897), who has recently reviewed this subject, about twenty-eight are on record.

---

[1] See Dr. Keen's paper, "Tuberculosis or Carcinoma of the Stomach; Exploratory Cœliotomy Subsequent Apparently Complete Cure." Annals of Surgery, June, 1897.

"The operation was done May 22, 1896. There were present during the operation, Professor J. H. Etheridge, of Chicago; Dr. W. A. Edwards, of San Diego, Cal., Dr. J. J. Buchanan, of Pittsburg, and Drs. J. M. Baldy, William J. Taylor, and George W. Spencer, of Philadelphia. A vertical incision was made through the middle of the left rectus. The stomach immediately presented and was drawn out. The site of the disease was found to extend toward the cardiac extremity of the stomach, and, in order to reach it fully, the incision was extended upward to the border of the ribs. Even then it was only possible to bring about half of the stomach into the abdominal opening and almost none of the upper end. By holding up the abdominal walls, however, a view of nearly all the stomach was obtained. From the cardiac end toward the pylorus the disease extended as an infiltrating growth, both anteriorly and posteriorly, over an area extending over nearly the whole of the stomach. It did not reach quite to the pylorus. The mass was nodulated, hard, and thick, and every one present believed that it was cancerous. It was so extensive that no room was left for a gastro-enterostomy, so the abdomen was closed. Before doing so two enlarged glands in the great omentum were noted, and around one of these a ligature was cast, after which it was removed for microscopic examination.

"The patient made an uninterrupted recovery. Shortly after the operation he began to take liquid, and then semi-solid food, and soon afterward solid food, and left the hospital about three weeks after the operation, having not only recovered from the operation, but being, apparently, on the high-road to health. Dr. Keen was much surprised when, later, Dr. Kyle made the following report: 'Certain areas showed small nodules surrounded by dense fibrous tissue. The blood-vessels, while not entirely obliterated, showed thickening of the walls, especially the intima. It is undoubtedly tubercular.'

"In August, three months after the operation, the patient reported that his weight had increased to 171 pounds, and in October it had risen to 178½ pounds; his appetite, digestion, and assimilation were excellent, and he suffered no pain. In fact, his only trouble was an occasional sleepless night. His diet in August consisted of 'bread and butter, milk, eggs, potatoes, beefsteak, mutton, fish, rice, oatmeal, and fruit.' He had been taking some syrup of the hypophosphites and cod-liver oil in consequence of Dr. Kyle's report.

"Dr. Keen said that he had mentioned the names of the gentlemen present for the especial reason that those present at the operation, all men of large experience, agreed that the disease was unquestionably carcinoma of the stomach."

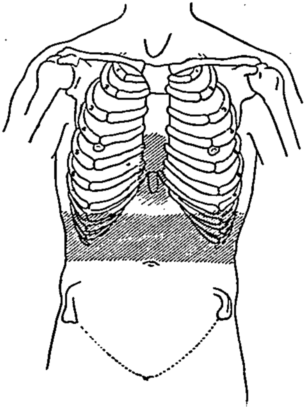
The apparent recovery of the patient had caused Dr. Keen, at first, to accept the view of Dr. Kyle, who first examined the removed nodule and gland, that the condition was one of tuberculosis. Later, but immediately subsequent to the publication of Dr. Keen's report, and long before the patient again came under observation, sections from the supposed tubercular glands were submitted to Dr. Welch, of Johns Hopkins University, to Dr. Councilman, of Harvard University, to Dr. Adami, of McGill University, and to Dr. Prudden, of the College of Physicians and Surgeons, New York. These all reported no evidence whatever of tubercle, but that sections from the nodule showed it to be undoubtedly a metastatic cancer. Dr. Welch regarded it as scirrhus; Dr. Councilman, as adenocarcinoma; Drs. Adami and Prudden spoke of it as simply cancer. The preparations of the sections sent were regarded to be so poor that the exact character of cancer was somewhat in doubt. Dr. Councilman, however, pronounced it positively to be an adenocarcinoma.

The subsequent history of the case is as follows:

The patient was referred to the writer by Dr. Keen in December, 1897, seventeen months following the operation. On getting about after the operation he had improved wonderfully in health, all gastric symptoms for a time practically disappearing. He gained rapidly in strength and flesh, so that at the end of five months he weighed nearly fifteen pounds more than he ever had before (175). During this time he had not resumed practice, but took every care of his health. After he had held this maximum gain about five months he began to lose weight without assignable cause. He had no gastric symptoms during this time; no epigastric distress, sour stomach, or nausea. He had, as was common with him for a number of years, but little appetite, and slept badly, and he was considerably disturbed by cramps in the calf muscles. He now spent several months in the mountains, and in September, 1897 (sixteen months after the operation), he returned to his home feeling in very good health and weighing 166 pounds. Shortly after this (October, 1897) gastric symptoms reappeared. These were nausea and occasionally a tendency to vomit if he ate very heartily. Heartburn or pyrosis was never evident. A regurgitation, which he described as "cold sweet water," occurred once or twice weekly. Because of loss of appetite he has lately been living largely on milk punches. About the middle of October, 1897, he began to feel gastric pain, and with its appearance a rapid drop in weight occurred (twenty-six pounds in two months). The pain was in the region of the sternum, in the back, and in the epigastrium. The sternal pain occupied a space from mid-sternum to a distance midway between the tip of the ensiform appendix and the umbilicus, and about three inches in breadth. (Fig. 1.) This pain he describes as most prostrating. He regarded it as intimately related in characteristics to a dorsal pain of most annoying character, the situation of which was, invariably, immediately to the right of the spinal column, between it and the vertebral border of the scapula, and extending from the fifth to the eighth ribs (Fig. 2). There was also a diffuse pain in the epigastrium and both hypochondria. These pains were all invariably more severe at night after retiring, especially that in the dorsal region. Otherwise the character of pain was interesting in that it was commonly felt, as in the pain of hyperchlorhydria, at a time after food when excess of free hydrochloric acid becomes marked. Taking food, and especially meat, almost invariably relieved or removed all pain. Drinking freely of water, such as Vichy, also relieved the pain, although not to the extent that food did. The use of sodium bicarbonate, however, had no marked effect.

Unprovoked vomiting was unusual, and had not occurred for some time. He had formed a habit some weeks before I saw him of each morning drinking a pint or so of warm water containing sodium bicarbonate, and then emptying the stomach by regurgitating its contents. He could in this way relieve himself of any discomfort experienced. The rejected material rarely contained food eaten the night before. He stated there was usually a good deal of mucus, and that occasionally evidences of blood were noted. Inspection of the regurgitated matter showed it to contain altered blood. It was quite coffee-ground in character. He had been subject to constipation for years. The patient's skin was of cachectic hue. His general condition was really very good. His weight was 149 pounds, within ten to fifteen pounds of his best weight when in good health, and nearly thirty pounds in excess of his weight eighteen months before. During the two weeks he was under observation it was interesting that he gained seven pounds, indicating the still well-preserved recuperative power.

FIG. 1.

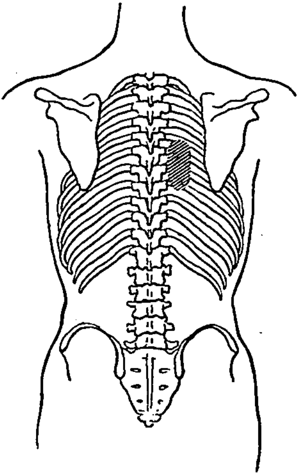


The two areas shaded are those of pain, as decribed.

Physical examination of the organs of the chest revealed no abnormality; the lungs showed no sign of disease, and the heart was fairly strong and the sounds free from murmurs.

The abdominal wall displayed the healed cicatrix of the preceding cœliotomy. Indications of local or general resistance in the stomach region, or of tumor, and abnormal glandular enlargement anywhere, were absent. The liver and spleen were normal in outline. The inferior portions of both kidneys were palpable only on full inspiration. The stomach, by ordinary percussion, by auscultatory percussion, by gaseous inflation, and by transillumination, was found to be normally placed. Indeed, by gastro-diaphany, as is here illustrated (Fig. 3), it was found to occupy a position considerably higher (three-fourths of an inch above the umbilicus) than is usual when fully distended with water, as the organ was at the time of this illumination with 1100 c.c. of water. The cause of this was subsequently made apparent (adhesions to the abdominal wall and to liver). The transillumination with a lamp of three candle-power was perfect, the anterior surface of the organ being beautifully mapped on the abdominal wall. The scar area alone was shaded somewhat.

FIG. 2.



The shaded area is the dorsal site of pain, as described.

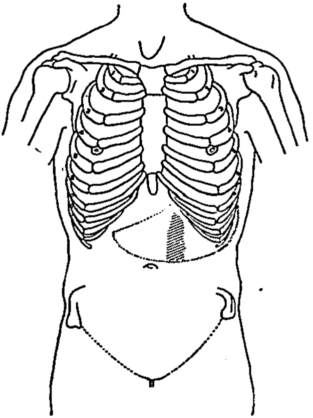
Examination of the urine showed it to be free from albumin, sugar, and casts.

For some time, as he thought that washing out the stomach would be beneficial, and as he disliked to employ the tube, his habit was to drink water and regurgitate it. He was able to report that food, other than in traces, was never present in the morning.

The examination of the stomach-contents was as follows:

December 7, 1897. Stomach washed and 500 c.c. of rather thick oatmeal gruel, flavored with salt, administered. Two and one-quarter hours subsequently, 300 c.c. were removed, practically all that remained, as was shown by subsequent lavage. Removed contents were dark red, showing on standing a copious dark sediment. The filtrate was clear. T. A. = 72; HCl = 0.2 per cent.; acid salts = 13; no lactic acid. Starch converted into erythrodextrose. Test for labzymogen: 10 c.c. milk, at 40° C.; 2 c.c. filtrate; solidification of the milk occurred within two minutes.

FIG. 3.



Transilluminated area, with shaded area of scar; stomach containing 1100 c.c. water.

8th. Stomach washed and 500 c.c. thick oatmeal gruel administered; 320 c.c. remaining in two and one-half hours. Coffee-ground sediment as before. Upper stratum, on standing, reddish hue. Filtrate not blood-stained. T. A. = 66; HCl = 0.19 per cent.; acid salts = 15. No organic acids. Erythrodextrose as before. Lab-test, under same conditions as above, positive in the same time.

Digestion test: in incubator at 40° C., egg disk approximately ½ c.m. square, by $\frac{1}{6}$ c.m. thickness in each, 10 c.c. filtrate. One phial reinforced by an active preparation of pepsin. The disk in the phial unreinforced by pepsin had entirely disappeared in three hours; there were still faint remains of the disk in the phial in which pepsin had been added. The disks were of the same size, but, as they were not accurately weighed, that in the pepsin solution might have been a trifle larger, and, hence, caused this difference. This test was repeated with the filtrate from two other trial meals, and showed that the addition of pepsin produced no earlier disappearance of the egg disk than if it had not been added. It showed that secretion of pepsin was in the same satisfactory proportion as the HCl.

It should be here remarked that the gruel meal on each occasion caused considerable gastric distress and pain, all of which disappeared instantly on their removal and washing out of the stomach.

9th. After lavage, a large, thick, tenderloin steak, 60 grammes of bread, 360 c.c. of milk were eaten. Four hours later 300 c.c. quite fluid contents were removed through the tube. A fair amount remained, as was shown by a subsequent lavage. Contents not blood-stained, although much retching was produced by the use of the tube. T. A. of filtrate = 151 ; HCl = 66. The digestion test was as above stated.

13th. The same meal taken as on December 9th. Removed at the same interval 300 c.c. No blood; contents of natural appearance. T. A. = 144 ; free HCl = 72.

It is noteworthy that, as remarked, while with the gruel meal gastric distress was always felt, relieved only by the removal of the meal, and subsequent washing, not the slightest trace of pain or discomfort was experienced during the digestion of the full meal of steak, bread, and milk. During the two weeks he was under observation this was found to be invariable in many trials. He could eat and digest with relish and freedom of symptoms a steak of good size.

Blood examination, December 9th. Red blood-corpuscles, 3,528,000. Hb. 46. This examination repeated later gave practically similar results. In the morning, fasting, leucocytes, 5940. Three and a quarter hours after a large tenderloin steak, milk, and bread, the leucocytes count was 7700; three-quarters of an hour later the count repeated was 8000.

Second day's examination. Nothing save oatmeal gruel had been taken, leucocytes, 6500. Four hours after a large tenderloin steak, bread, and milk, the count was 9000. These examinations were very painstakingly carried out, and may be regarded as entirely accurate. They show absence of pathological increase in the number of leucocytes, and the presence of a normal digestive leucocytosis. A differential count (1350 leucocytes) gave interesting results:

Polymorphonuclear neutrophiles	79.00 per cent.
Small lymphocytes	13.63 "
Large lymphocytes	3.46 "
Transitional leucocytes	2.42 "
Eosinophiles	1.49 "

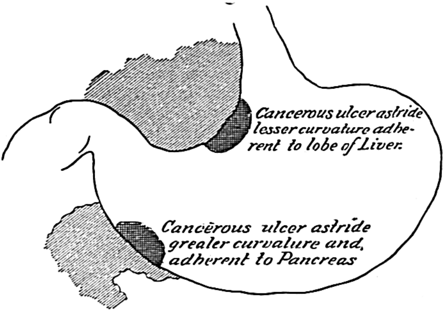
This showed a pathological condition in the relative proportions of the leucocytes despite the absence of an increase in the total count, which on this occasion was 6500.

After this outlined study of the case, the opinion was given that the original trouble had been a long-existing hyperchlorhydria; that this, in all probability, had some years back been succeeded by ulcer, and that the ulcer had at least two years before undergone carcinomatous degeneration. Of course, this last statement would have been impossible but for the knowledge of the removal of the metastatic nodule. Indeed, but for this, the diagnosis of cancer itself at this time, in view of the history of the case since the operation, would have been seriously in question. The growth was regarded as being in the body of the stomach, not encroaching on the pylorus. The diminished motility was presumed to be due to weakness of the musculature, through carcinomatous infiltration of the stomach wall. To this opinion I had Dr. Keen's concurrence. The patient placing himself in our hands, a second exploratory cœliotomy was advised, as at least offering a chance of again temporarily arresting the progress of the cancer. It was, moreover, hoped that an opportunity might be afforded for an excision of the growth, or, indeed, of a part or the whole of the stomach, should indications of external metastasis not be present.

Second operation by Prof. Keen, December 23, 1897. The anterior wall of the stomach was found to be extensively adherent to the abdominal parietes over a large area. On incision of stomach, its interior, as far as could be seen at first, presented a healthy appearance. Its wall was thinner than normal, but the mucous membrane everywhere looked normal. Palpation revealed no thickening anywhere except posteriorly and superiorly near the œsophagus, at which point a circular hard ridge of some size could be felt, and afterward was seen. This mass appeared to be a very large ulcer, with elevated callous edges. A small clipping from the edge was removed for microscopic examination. The ulcer was too close to the diaphragm and too far from the incision to permit of its removal, or of the removal of the stomach itself, because of the extensive adhesions. It was concluded to establish a duodenal fistule to permit of feeding in this way, so that, as is remarked by Dr. Keen in his notes, "If the ulcer be a non-malignant one it would heal within two or three weeks; if malignant, the rest to the stomach would, at least, do no harm." The patient, unfortunately, after the first few days did badly. Obstinate hiccough appeared; the external wound failed to heal, and he succumbed finally, eighteen days after operation, to a septic peritonitis.

The necropsy was performed by Dr. Keen eighteen hours after death. Through a misunderstanding, the body had not been placed on ice, and was already somewhat advanced in decomposition. The whole external wound gaped, with protrusion of stomach and intestine. The peritoneal cavity contained considerable pus. The heart and lungs were healthy. The liver was somewhat enlarged and pale; no evidence of metastasis here or in the peritoneum could be found. Spleen and kidneys appeared healthy. The stomach was normally placed and undilated. It was adherent to the abdominal wall, and superiorly, through the entire length of the lesser curvature, to the under surface of the left lobe of the liver, and posteriorly, at the base of the lower ulcer, to the pancreas. The pancreas appeared normal, and microscopic examination subsequently disclosed that it was so. Section of the stomach showed some softening of its walls due to post-mortem changes. Two large and entirely isolated ulcers were now noted. One, the nearest edge of which was 1¼ cm. from the cardiac orifice, was astride the lesser curvature, with the larger portion toward the posterior wall. It was adherent by its base to the inferior surface of the left lobe of the liver. This ulcer was in the largest diameter 8½ cm. and transversely 6 cm. It was of ovoid shape, with crater-like raised thickened edges. The margins were especially prominent on the portion nearest the cardia; here the edge measured in one part 1⅓ c.cm. The floor of the ulcer was indurated, smooth, and depressed, and adherent to the left lobe of the liver. The second ulcer was situated astride the greater curvature, 7 c.cm. from the pylorus. It was of circular outline, with thickened, elevated, sloping edges, like the first described, and with a slightly excavated, considerably indurated centre. This ulcer was adherent to the adjacent part of the pancreas. It measured 5 cm. in length by 4½ cm. in breadth. The edges of both ulcers were œdematous, hemorrhagic, and somewhat polypoid. Immediately surrounding the ulcers the stomach-wall was somewhat indurated, but this was not evident for any distance. There was apparently no connection between the two ulcers, which were widely separated, as is shown in the accompanying cut and in the photographs.

FIG. 4.


Cancerous ulcer astride lesser curvature adherent to lobe of Liver.
Cancerous ulcer astride greater curvature and adherent to Pancreas

The lumen of the pylorus was narrowed through fibrous and muscular thickening of its wall. It admitted with difficulty only the tip of the index-finger.

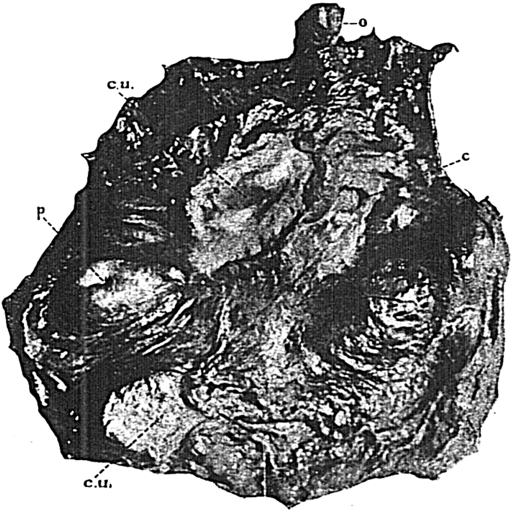
The specimen was first given to Dr. A. O. J. Kelly, to remove portions for microscopic examinations. Subsequently portions of the growths were sent by Dr. Keen to Drs. Welch, Councilman, Adami, and Prudden.

Dr. Kelly's report is as follows:

Microscopical Examination. The specimen had been placed in alcohol, but is in a very poor condition. Some areas are in a state of putrefaction and do not permit of a careful study of histologic details. This is especially true of the larger ulcerated area situate on the posterior wall toward the lesser curvature. The smaller ulcerated area situate at the posterior-inferior region toward the greater curvature is in a fairly good state of preservation.

Sections through the edge of this latter ulcerated area reveal a carcinomatous new-growth arising from the mucous coat, implicating the latter, and also the submucous, the muscular, and the subserous layers of the wall of the organ. The mucous and submucous coats are entirely replaced by the new-growth; the muscular and the subserous are also considerably invaded and to a less extent replaced. The growth consists of cells arranged in alveoli and surrounded by a connective-tissue stroma. The alveoli, which pervade the tissues in all directions, vary greatly in size and shape. For the most part they are elongated and narrow. Others are much wider and very irregular. The cells are of distinctly epithelial type. They commonly line the alveoli, leaving a central lumen, which is in some places free, in others more or less filled with detritus. Other alveoli, in addition to being lined by the cells, are completely filled by them. The cells are predominatingly high-cylindrical in shape, especially those which line the alveoli and leave a clear lumen. Other cells constituting the periphery of solid nests of cells appear more cubical. Still others, and all situate toward the centre of the alveoli, are polymorphous. The cells reveal distinct nuclei, which stain readily; those of the cylindrical cells being situate toward the base of the cells. Nucleoli are also discernible. There are at present a few karyokinetic figures which are generally hyperchromatic. Many

FIG. 5.



C. Cardia. *C. u.* Carcinomatous ulcer. *O.* Œsophagus. *P.* Pylorus bulged into the stomach in order to show the thickening and narrowing.

of the cells, especially those situate toward the centre of the nests, reveal various retrograde metamorphoses. The stroma, which consists of fully developed fibrillar connective tissue, varies considerably in different regions. In places it is abundant, in others scanty. Its nuclei present some karyokinetic figures, and the tissue itself is the seat of considerable round-cell infiltration, which latter exhibits many evidences of retrograde changes. The bloodvessels, particularly the larger ones, manifest, for the most part, thickened walls. Toward its free surface the neoplasm is markedly necrotic, and this process is complete at the central area of ulceration, where it extends to and implicates the muscular coat of the stomach. The latter is markedly hyperplastic. This, together with the fibrous overgrowth, mainly of the submucous coat, and the tumor-mass itself, occasion the marked thickening and polypoid condition of the edge of the ulcerated area. Away from the seat of ulceration there is a gradual transition from the tumor-alveoli to apparently normal gastric tubules. There first occurs a diminution of the obviously neoplastic alveoli, then a succession of irregular gastric tubules, and finally apparently normal tubules. Nests of cancer-cells also invade the muscular coat for a short distance from the ulcerated edge. These transitional stages, however, apparently do not implicate more than 1 to 1.5 cm. of the stomach-wall beyond the ulcerated edge. A section 2 cm. from this edge fails to disclose any noteworthy deviation from the normal.

Sections through the edge of the larger ulcerated area, situate toward the lesser curvature, reveal conditions which, as far as can be definitely determined in view of the decomposed state of the specimen at this region, are entirely analogous to those already detailed in connection with the smaller ulcerated area. The alveoli, however, are in many instances much larger, and the cells arranged much more irregularly. In the deeper layers of the stomach-wall there are a few cystic spaces lined with cylindrical epithelium.

Sections through the pylorus reveal it to be 1 to 1.2 cm. in thickness. Both the muscular and the fibrous layers of the wall are implicated in this overgrowth. There is no carcinomatous invasion of this region. Sections from two areas between the two ulcerated surfaces fail to reveal any evidences of carcinomatous alteration. The structures here present no especial deviations from the normal. The same is also true of sections from a region near the pylorus between the ulcerated areas.

Diagnosis. Double ulcerated adenocarcinomas of the stomach. Each ulcerated area singly considered presents no especial deviations from that type of carcinoma of the stomach of which these are instances. The interest in the specimen centres in the fact that in the same stomach there are found two carcinomas apparently unconnected with each other. There is no diffuse carcinomatous infiltration of the wall of the stomach, and aside from the marked thickening of the pylorus and about the ulcerated areas there is no especial implication of the fibrous connective tissues, certainly no diffuse pathological alteration of this structure.

The others, except Dr. Prudden, reported similarly, that sections from the portions of the two ulcers submitted showed them to be ulcerated typical adenocarcinomas. Dr. Prudden briefly reported that the growths were carcinomatous. The specimen had not been well preserved when the portions were subsequently sent to the others. Dr. Welch, in his report to Dr. Keen, after remarking on the badly preserved condition of the specimens sent him, which made study of them somewhat difficult, said that the essential points could be determined. There could be no question as to cancer and its type, and that a careful search revealed no distinct evidences of disease for a distance of much more than 1 cm. beyond the ulcers.

There are several features in this case of very special interest. The early history left little doubt concerning the existence of a long-standing gastric neurosis with associated hyperchlorhydria. That one or more gastric ulcers should appear in a subject of chronic hyperchlorhydria, debilitated by grief, overwork, and inanition—induced both by these causes, as by total anorexia, superadded to long-existing indigestion—cannot be a matter of surprise. Nor could it that a simple peptic ulcer should subsequently be the seat of carcinomatous transformation. Such cases, though not numerous, are on record. The features which, however, are most interesting about the case are as follows: The apparent extensive disease of the body of the stomach at the time of the first operation; the apparent recovery of the patient and the surprising increase in weight to a point beyond that ever reached in health, and its maintenance for so long a time in one then the probable subject of two separate carcinomas, which had already given rise to a nodular metastasis in the omentum; eighteen months subsequently the fairly good physical condition; the really small loss from the weight usual in health—this was in a measure explained by the remarkable preservation of the digestive condition, which in itself was noteworthy; the freedom from pain when the functions of the stomach were taxed to their utmost, as in the digestion of a heavy meal of proteids; the existence of two unconnected cancerous ulcers in the stomach. Also noteworthy was the presence of a digestive leucocytosis with absence of a pathological increase in the number of leucocytes.

In view of the finding at the time of the second operation, and the post-mortem revelations—the practical limitation of the disease to the two cancerous ulcers—the condition noted by Dr. Keen and observed by others present at the time of the first operation seems quite inexplicable. The only attempt at an explanation is that there must have occurred during the whole time the stomach-wall was exposed a tonic contraction of this viscus, throwing it into folds, and thus originating the nodular condition simulating organic disease noted. Although this seems improbable, and it is, moreover, unlikely that Dr. Keen's years of anatomical and surgical experience, rendering him so familiar with the appearance of the healthy and diseased stomach, would have permitted him to be deceived, no other explanation is at hand. For the fact remains that no evidence of gross or minute departure from the normal could be found to exist in the stomach-wall save at and immediately about the site of the ulcers. But if one with the extensive experience and keen powers of observation of the surgeon named could be so misled, not to speak of the others present who were similarly led astray, it indicates the extreme caution necessary in forming a judgment as to the condition of the stomach concerning presence or absence of a growth without an incision into that viscus.

The temporary entire subsidence of symptoms with decided increase in weight is occasionally noted after mere exploratory operation in cases of cancer of the stomach.[1] While temporary removal of symptoms after a gastro-enterostomy, in cancer producing obstruction of the pylorus, may be readily enough understood, the same after a mere exploratory section, if a causal relation can be traced, is in itself mysterious. I am unaware of any case similar to my own in which actual *apparent recovery* followed, the patient *remaining so long free from symptoms.* The explanation why a mere exploratory section in which the involved organ is not disturbed should be so promptly followed by cessation of symptoms and decided and long-continued general improvement in health as to indicate some relation between the operation and improvement, is not at hand. The quite common occurrence of marked amelioration in symptoms, if not actual removal of the disease-process in tubercular peritonitis, following a mere exploratory section, is well known. Apparently, also, though it has been rarely noted, an extensive syphilitic gummatous formation in the liver may, without the employment of mercury or the iodides, be influenced in the same mannei —as in a case reported by Stengel (see *Annals of Surgery*, June, 1897, discussion on Dr. Keen's paper). More frequently than the latter, but immeasurably less common than the former, are the observed cases in which so great an amount of symptomatic improvement has occurred following a simple cœliotomy in gastric cancer as to indicate the existence of a direct active relationship between the operation and improvement. Yet these last are not known to be cases in which more than retardation of the growth was produced. We have no knowledge as to actual, partial, or complete disappearance of cancer of the stomach. It can only be said that such an occurrence is theoretically not impossible, if for no other reason, in view of the occasional observed disappearance of cancer of the external parts, such as epithelioma, during the administration of full doses of arsenic. That in the case under observation a growth more extensive than was found post-mortem had previously existed, the histological examination failed to reveal evidence. If carcinoma could be regarded as a germ disease, the likely explanation of cessation of growth and the occurrence of systematic improvement as the result of section in many cases of tubercular peritonitis—that of Kischenski—might be applicable here: that the result is due to a post-operative leucocytosis. If this were so, then it might be thought that the administration of nucleins would give similar results in cases of carcinoma in which there is yet at hand a fund of recuperative power. The nucleins, however, produce a physiological and not a pathological leucocytosis, the increase not being, as is usual in the latter, in the polymorphonuclear leucocytes, but, to a similar degree, in the young cells.

---

[1] I speak here of *entire* subsidence of symptoms. I believe there is no authentic instance of total disappearance of all gastric symptoms with considerable gain in weight, the whole maintained for some months, in a case of well-developed cancer of the stomach treated medically. It is true that short periods of improvement often occur in cases under no special treatment, and that marked amelioration will often follow resort to the tube. But even in these last cases the symptoms never entirely disappear, nor is the gain in weight extensive or long held.

As factors assisting whatever gave the original impetus to the improvement in the case were the vigorous recuperative power presumed to be possessed by the patient, the well-preserved digestive function, and the freedom from involvement of the apertures of the stomach in the cancerous process. The character of the carcinoma, too, has to be somewhat considered. Although not the slow-growing form, such as schirrus, adenocarcinoma is not supposed usually to tend to rapid metastatic extension. As was remarked by Dr. Adami[1] concerning this case, "columnar-celled cancers of the stomach are puzzling growths, in that of all forms of cancer of the stomach they appear to remain for the longest period purely local, and only infiltrate very slowly." If we do not consider the presence of the growths in the stomach, evidently but an isolated metastatis had occurred at the time of the first operation.

Although nothing in the microscopic or gross appearance of the two growths permits the assertion that they were primarily simple peptic ulcers which subsequently became carcinomatous, there is every probability that this is so, from the history and from our knowledge of similar cases, and from the fact that two identical separate ulcerating cancers were found. Whether the cancerous transformation of the ulcers was simultaneous or occurred serially, the second by infection from the first, is impossible to affirm positively. The latter is, of course, very probable. Infection by continuity of structure was scarcely likely, as was shown by the histologic examinations.

Infection may have occurred from contact through the occasional approximation of the two diseased surfaces of the empty stomach, the cancerous ulcer on the superior curvature near the cardia thus inoculating the simple ulcer on the inferior curvature; or particles of growth from the first, becoming dislodged, could easily have found their way to and a resting-place on the site of the ulcer on the greater curvature.

---

[1] In a private communication to Dr. Keen.

One might suppose that the very active digestive secretion, presumably always manifest in this case, would have tended readily to destroy the infecting principle before inoculation could occur. But we know too little of the intimate nature of this principle, or of its power of resistance, to hazard judgment on this point. At all events, the second ulcer was probably directly infected from the other cancerous ulcer. Other instances of presumed communicability of cancer are on record, such as epithelioma of the penis from coitus in a case of cancer of the cervix.

From the situation of the growths, encroachment upon the secretory power of the stomach did not occur; the stomach up to the time of death had practically normal function. Motility was somewhat interfered with, apparently not in consequence of the growths, but because of a slowly increasing pyloric hypertrophy with connective tissue increase, likely the result of the long-continued irritant action of excessive secretion of HCl.

The preservation of a digestive leucocytosis in this case, commonly but not invariably lost in cancer of the stomach, could not be a matter of surprise. Nor could it furnish to the thoughtful observer any valid evidence against malignancy, as the explanation for its preservation here is so evident. While the absence of a digestive leucocytosis is not in itself significant of cancer, commonly noted as it is in all maladies of the stomach in which peptonization of nitrogenous pabulum and its passage into the bowel are interfered with, its presence has been held to point strongly against that affection. Recently some exceptions to the rule that a digestive leucocytosis is invariably absent in cancer of the stomach have been recorded. This is not a matter of surprise. It is rather a matter for wonder that it could be supposed that the condition for the absence of a physiological increase of leucocytes after a meal of proteids should be always the same in gastric carcinoma. With a growth involving the pylorus, especially if associated, as is usual, with a practical loss of secretion of HCl, absence of a digestive leucocytosis is to be expected. But, as in this case, with the preservation of the secretory power and fairly good motility, the ability to digest a full meal must have its usual effect upon the blood. It was more surprising that a pathological leucocytosis involving a notable increase in the number of leucocytes in the circulating blood was not evident in a case of cancer so long existing. Although a pathological leucocytosis is not as common in advanced cancer of the stomach as in cancer of other organs or parts, it is usually met with in fair degree except when the disease is in a situation to obstruct the cardia. It was especially interesting that, although an actual increase in the number of leucocytes had not occurred, a pathological leucocytosis was in reality actually present, showing itself in an alteration in the normal relation of the varieties to each other, the polymorphonuclear elements existing in the percentage of 79. Attention, I believe, is not enough given to the significance of the occurrence of a mere relative increase of adult cells in cases in which no increase in the absolute number existed. Here 79 per cent. of polymorphonuclear leucocytes in a subject lacking in vigor, if not attributable to the occurrence of blood oozing from the sites of the cancers (the only other assignable cause evident), had its indication.

The diagnosis of a case of this sort is naturally attended with difficulty. The presence of carcinoma engrafted on an open ulcer, unless the latter has existed for a long time, has been often overlooked in life, so gradual is the merging of symptoms of chronic ulcer into those of cancer.

The diagnosis of these cases lies commonly in the recognition of a *carcinoma ex ulcere.* The ulcer has usually plainly enough preceded for a more or less long time the development of malignancy, producing the familiar characteristic symptoms. Not infrequently, however, gastric ulcer is for a long time latent. The usual symptoms may not be at all manifest. There may be practically no symptoms complained of, or those noted may consist of a simple heightening in the secretion of HCl, or those of a gastric neurosis unassociated with hyperchlorhydria may be alone manifest. The symptoms of presumptive ulcer first remarked may then be really those of the developing cancer. The case under consideration was of this sort. During the six years symptoms were largely those of a pronounced neurosis associated with hyperchlorhydria. The gastric discomfort spoken of here was so explained, except that the uneasiness or pain occurring several hours after taking food, extending to the back, should have excited the suspicion of ulcer. No vomiting had occurred and no hemorrhage had been noted until six years had elapsed, during the whole period of which doubtless ulcer existed. The growth had then been present sufficiently long to produce a secondary distinct cancer in the stomach and a nodule in the omentum. In such a case as this, especially in the period following operation, the great improvement in the general condition, with the practical cessation of symptoms and the enormous gain in weight, would have made the diagnosis of carcinoma of the stomach very difficult. Even eighteen months succeeding operation, when the frequent appearance of coffee-ground material in the stomach-contents, usually so strongly suggestive of cancer, was evident, other symptoms pointed so strongly against that condition that its certain recognition was impossible, at least without the discovery of bits of the growth in the stomach-contents, here searched for, in the short time he was under observation, in vain. No doubt particles of the growth in a case of adenocarcinoma could eventually have been found had opportunity for any prolonged search been permitted. The diagnosis being regarded as settled from the knowledge of the character of the metastatic nodule, the finding of cancerous particles was not necessary.

In the diagnosis of a case of doubtful carcinomatous ulcer, apart from points mentioned, the following are also to be considered: the loss of weight and the cachexia both apt to be out of proportion to what is usual in ulcer. The occurrence of constant oozing of blood, appearing as coffee-ground material in the vomit or in the wash-water, is significant of cancer rather than ulcer. Also important is the lack of decided response to the improved methods of treatment for ulcer, which usually rarely fail in prompt result in cases in which the lumen of the pylorus is not obstructed. Not long ago this, with the more or less constant presence of coffee-ground material in the vomit, led me to diagnosticate correctly carcinomatous degeneration in a case of chronic ulcer that had been under observation only a short time. The diagnosis was confirmed by finding a bit of the growth (an adenocarcinoma) in the wash-water. The loss of weight may not be more marked than in ulcer, especially if the ulcer be so situated as to produce pyloric obstruction. The patient, also, may be very responsive to treatment for a time, as was true in the case just spoken of and in that of the subject of this paper. The extraordinary gain in the latter after the first section, with cessation of symptoms, could not but tend to mislead. Such a gain, long retained, however, is unknown as a result of any medical treatment of cancerous ulcer.

The general question of diagnosis of carcinomatous ulcer must be deferred for fuller consideration in a second paper in which another case the writer has encountered and diagnosed in life will be described, as will be a case of chronic ulcer in a man of middle age, in whom adherent omentum caused the presence of a pyloric tumor suggestive of carcinoma. The present paper is intended merely as a report of what the writer regards as a remarkable case, worthy of isolated publication.